Notebook Series -- Notebooks by Edison
Notebook, N-14-04-26

This notebook contains dated entries from April and May 1914, but it may have continued to be used as late as July. The entries, which are all by Edison, pertain to experiments aimed at the rejuvenation or "regeneration" of used storage battery components. The entries toward the beginning of the book deal mainly with the nickel flake and nickel hydrate mix from old positive electrode "tubes." Included are lists of chemical compounds, along with results of tests performed on cells constructed with various regenerated tubes. The entries in the middle of the book deal with the iron from old negative electrode "pockets." There is also one page of crossed-out notes on the manufacture of disc records. The battery experiments bear sequential numbers, 125-141 and 142E-240E. Experiments 129-184E involve various chemical compounds that were prepared by Ludwig (Louis) Ott and used to treat old nickel. These chemicals are described in N-13-10-05. Some of the cells produced in experiments 142E-240E were apparently transferred to the Edison Storage Battery Co. at Silver Lake for continued testing. Their subsequent performance is tabulated in N-14-12-14.1, and the sequence of experiments is continued in N-14-12-03. Inserted into the book are two reports from July 9, 1914. One, addressed to Edison by John V. Miller at the Edison Chemical Works, reports on experimental pockets prepared for experiments 240E and 250E-252E. The other, addressed to Robert Bachman, describes several experimental pockets prepared for Edison. The front cover is labeled "Somewhat Important" and "Regenerate No One." The pages are unnumbered. Approximately 120 pages have been used.

April 26 1914

Regeneration of Nickel + flake from 4 yr old cells that have gone low in Capacity

I note that flake + green from use of glycerine + KOH as dissolving agent, on treatment with acid when Glyc + KOH are washed out act different according to acid used –

2% HNO_3 gives clear solution only little green color

2% H_2SO_4 ditto.

2% HCl gives yellow green milky liquid + does not get clear dissolves Ni but the following. Muddy yellowish Colloid continues to run thru, apparently no let up, even after acid gone

The muddy liquid treated with HNO_3 becomes green & clear showing that is mostly nickel. The clear sol precep by ammonia shows a small amount of white yellow iron — probably Fe & Al —

This is true with 1% HCl & 2% HNO_3 — but not had like 2% HCl

Evidently HCl has some action that the other acids haven't.

The only one that is perfectly clear is H_2SO_4 —

I am repeating 4 batches of 4 yr old mix from tubes — These have been put in 5%, 10%, 15% & 20% glycerin & water & 3% KOH or NaOH in all

5% didn't disintegrate at all -
10 had more disintegrated
15% Slight wear
20% all were disintegrated
Kept them in flasks on hot plate with 1/8" asbestos between flasks & hot plate.
They were great bacteria

Lot No

129 - Considerable pieces not broken up

132 Nearly all broken up

130 Nearly all broken up

131 - 4 pieces

136 - quite amount of cobalt in ammonia

Thus in K formate & it may take out aluminia ~~etc~~.

I now put 2% HNO_3 in

1.0 ft #

136 NH_4 pump condensing coils

126

127

134

135

125

128

They all have been well washed - 10 or 15 fresh waters — put acid — mix of Na & flake —

No colloids that run through filter in any of above, take HCl in glycerin KOH mix —

All above about same degree of green color

The least green is from 128 —

of the glycerin series —
only HCl, shows ferric
Iron — HNO_3 H_2SO_4 &
1% HCl 2% NO_3 white flocculent
precipitate alumina —

Apparently its the HNO_3 that
takes out the alumina
H_2SO_4 takes out some

But HCl + HNO_3 apparently don't
take out ferric only the
white pp,

It takes 3 or 4 hours for
the alumina to come down

None of the previous #
were green except glycerin series

Salicylate cant be washed
prez. of Na or K Salicylate —
approximately —

HNO_3 + H_2SO_4 + glycerine are
the best to work no colloids

of the solution (acid) decanted
off from previous Numbers
except glycerine series —

127 + 134 ~~are~~ have the most
but it will require longer
time to be sure —

129 - acid decanted off + H_2SO_4
Very large white Al sic
precip - has a reddish tinge
showing ferric —

Offs 1205 —

Hot

129 —	50 grms	5 grms	glycerin	100 cc	3 grm NaOH
130	"	10	"	"	"
131	"	15	"	"	"
132		20	"	"	"

56 Hours

Left on hot plate, with water bath between in flasks —
put the contents of the 100 cc in each flask —

133. K Hypophosphorus —

134 K Sulphide, lover of S

135 Na Salicylate

136 K Formate — white precip NH4

137 Na Formate

138 Glycerophosphate Soda

Offs #

139 Sodium Bromide

140 Paramidobenzol sulphonate

141. glucose

128-	100 cc	20 glyc	3 NaOH, Cold
125		5 glyc	"
127		15 glycerol	"
126		10 "	"

I have sent
129 130 131 & 132 separated by me
after drying I screen green & flake
thru 20 mesh —

Had to crumble flake a
little to get 25% that stayed
on 20 mesh —

Green left only little flake in
Gave the samples to Baeder
Each to be made as follow

2 tubes old Ni old flake
2 " New Ni " "
2 " old Ni new flake

134 & 135
give big yield of
green
100 grm
whereas
126 & 127
give very small
yield 1/-
50 grm
probably lost in
washing.

Note scarcely any Alumina
in 135 —

Lots of broken ends
of tubes & Caps in
all —

134 - not well disintegrated, hard to
separate flake from the black
connected in goes over with
flake — It will be difficult
Comedy to separate —

135 - disintegrated fairly
well — Hard wash the
out of flake lots cuttings on
attrition, that runs thru
filter —

136 = fairly disintegrated
after acid treatment flake
yellowish — but only some
flakes —

I think most white precip
Supposed "Cl" comes out
128

I note that 20% sol of Chlammonia
with tube pieces in dissolves
Ni 3 or 4 times faster & more
of it than the 2% acids
Even 3% ——

None of the 2% acid sol
HNO_3 H_2SO_4 HCl & Aqua Regia
disintegrate the ni tube pieces.

Duplicate)
2 = D 72 hours

16 - 72 hours -
Sunny brown -

Following Disintegrate
Ni cylinders from all Inter

All Deionized Solutions

⊕ 1 = K Carbonate - partial in 24 hours no Ni
2 K Bichromate slightly in 24 " no Ni
⊕ 3 K Oxalate not disintegrated Much Ni dissolved
⊕ 4 K Parachlorate " "
⊕ 5 K Arsenite, all disintegrated some Ni in 24 hours
It breaks up Ni to Colloid + all runs thru filter.
⊕ 6 K Benzoate not disintegrated —
⊕ 7 K Chlorate "
⊕ 8 K Sulphite partly disintegrated, much Ni dissolved - 24 hours
9 K Cy - Totally disintegrated - dissolves much Ni 24 "
10 K Phosphate Not disintegrated
11 Hydrosulphite, Totally disintegrated in 24 hours green Sol
Coats Ni Off with Nickel - if boiled all the
Ni is reduced to metal -
12 K Bitartrate slightly disintegrated, sol greenish
⊕ 13 K Nitrite 1/2 disintegrated
⊕ 14 K Chloride 1/2 disintegrated, Solution bluish green
⊕ 15 K Sulphate 1/3 " —
16 K Iodide - completely disintegrated in 2 hours
no Ni dissolved - Hard to wash free of Iodide -

17 K Permangate 1/2 disintegrated
⊕ 18 K Bisulphate disintegration starts in 5 min nearly
all disintegrated - 3/4 disintegrated - 24 hours Sol green

19 – 72 hours

20 – 72 " trace of Ni

22 72 " – 70 To 105 °F also no Ni dis

27 36 some Ni dis + some black changed to green

16 – no Ni dis, hard as wood

19 K Ferrocy. – dissolved in 2 hours very little Ni dissolved – (1 trace)

20 K Sulphide dissolved in 48 hours no Ni dissolved

21 K Manganate ?

22 K Hyposulphite Completely dissolved 24 h no Ni dissolved

23 K Chromate ?

24 K Arsenate ?

25 K Bromate ?

26 K Benoxalate – Solution very green –

27 K Hypophosphorous. dissolved 24 hours on dilution with water gases, much Ni dissolved

28 K Propionate slightly green

29 K Ferricy 3/4 dissolved

30 K Lactate not saturated sol very green Completely dissolved in 24 hours,

31 K Ethylsulphate not saturated 3/4 dissolved

32 K Persulphate 3/4 dissolved

33 K Ethylsulphonate, Tubes covered with brown flocculent coating Brown flocculent precipitate

⊕ 34 – K Carbonate dissolved in 96 hours very little Ni dissolved

⊕ 35 K Formate not saturated Dissolved in 48 hours no Ni dissolved

36 K Urate Light green

⊕ 37 K Citrate Completely dissolved in 24 hours solution Brown great deal Ni dissolved Colloid Ni runs thru filter –

38 K Salicylate, Completely dissolved in 30 hours on filtering no nickel in filtrate but a large precipitate formed is soluble in a large amount of water & contains some Ni Very different to work free of sodium

39 K Chlorochromate smells of Chlorine strong –

Dup

43 – 72 hours. Trace Ni – temperatures from 70 to 125° fahr –

⊕ 40 – K Lactophosphate not sat
Color turns green – probably ice and dissolved if concentrated. no lichens are all soft

⊕ 41 K Sulpho Ethylate not sat 1/2 dissolved

⊕ 42 K Metaboriate 1/4 dissolved

⊕ 43 K Sulphocyanate dissolved 96 hours trace of Ni dissolved

44 K Ethylsulphuric 1/2 Dissolved
45 K Percarbonate 1/2 "
46 Seignette Salt Light blue precip some Ni dissolved gels very slimy Colloid runs thru filter Mg
⊕ 47 K Bromide 1/2 Dissolved
48 K Valeranate not sat 1/2 Dissolved
49 K Cyanate, dissolves much Ni
50 K Tannate dissolved Ni
51 K Benzene Disulphonate 1/2 Dissolved
⊕ 52 K Sulphobenzoate 1/2 "
53 K + Fe Oxalate Very little dissolved much ferric hydrox formed

59 – 36 hours – no rise of temp as in K salt. ?

64 – 36 "

71 – 72 hours no ni dis but hard to reach

54 – Na bicarb –

⊕ 55 Na Acetate ?

56 Na Cy dissolves much Ni

⊕ 57 $Na_2C_2O_4$ Oxalate Sol light green

⊕ 58 Na NH_4 phosphate "

59 Na Hyposulphite dissolved 48 hour no ni dis

60 Na Bromide sol light green ½ dissolved

⊕ 61 Na Arsenate

62 Na Phosphate

⊕ 63 Na Phenylate ½ dissolved

⊕ 64 Na Sulphite Dissolved 48 hours no ni dis

65 Na Benzoate ?

66 Na Carbonate ?

67 Na Sulphide ¼ dissolved

⊕ 68 Na Cl – flocculent precip tinge of green

⊕ 69 Na Bisulphate nearly all dissolved in 4 hours dissolved in 5 hours, but solution green was green

⊕ 70 Na Borate ¾ dissolved

71 Na Salicylate turns brown on addition of salicylate dissolved 48 hours trace ni dis

⊕ 72 Na Nitrite ¾ dissolved

⊕ 73 Na Phosphite – ?

74 [illegible]

82 72 hours temp 70 to 140 Fahr
entirely too Exp requires 600 cc for
50 grams max -

74 - Na Silicofluoride - flocculent ppt
white - is Thus Chemical -

⊕ 75 Na fluoride -
⊕ 76 Na Biphosphate - tinge of green
⊕ 77 - Na lactrate, sol light green floc ppt green
⊕ 78 Na Manganate 1/4 dissolved
⊕ 79 Na Chromate
⊕ 80 Na Vanadate
81 - Na Sulphocarbonate - dissolved 48 hours
in recovering mechanical phase deposits
Colloid - dis ni

82 Na Peroxide - all dissolved 48 hours
green very marked Lot. of black left
on filter paper H_2O_2 3% decomposition

⊕ 83 - Na Bulyrate
84 Na Bichrom 1/2 dissolved
85 Na Urate - 1/4 dissolved
⊕ 86 Na Phosphate Substance
87 Na Benzene Sulphonate 1/2 dissolved
88 Na Phosphotungstate, satin green

Rep

95 — 72 hours no ni dis hard to work

113 — 24 hours

⊕ 89 Na Cinnamate
⊕ 90 Na Tungstate
⊕ 91 Na Lactate D slgd 48 hours Sol tinge green
92 Na Stibic 1/2 D slgd
⊕ 93 Na Boro benzoate
⊕ 94 Na + Mg Tartrate 3/4 D slgd tinge green
⊕ 95 Na Sulphanilate D slgd 48 hours no ni deposited
96 Na Sub Benzoate 1/4 disl'gd
⊕ 97 Na Chlorate
98 Na Valerianate
99 Na Sulfoethylate disl'gd 48 hours Sol very green
100 Na Aluminate
⊕ 101 Na Sulfovinate
102 Na Biborate 1/2 D
103 Na + K Sulphate D in 96 hours No ni dis
104 Na Bitartrate D 48 hours Sol very green
105 Na Ferrocy D 48 hours some ni dis
106 Na Tannate
107 Na Tetra oxalate D 96 hours Sol very green much ni dis
⊕ 108 Na Persulphate D 96 hours much ni dis
109 Na Bismuthate
110 Na Bromate D 96 hours no ni dis
⊕ 111 Na glycerophosphate D 48 hours not saturated
⊕ 112 Na Bromate 1/2 D.
113 H_2O_2 disl'gd —

Eventually with proper process, only 5 @ 7% need be discarded 93 to 95% will be in shape to use again —

100 mesh screen will screen out all the fine Ni from flake leaving very little fine flake —

Done Day —

After washing & separating ready for coat some fine Ni in flake —

134	12.69 gram lost	78.240 9062 87302	Ni fl	100g
135	15.12 gram lost	71.70 1318 84.88	Ni	100 G
136	13.11 gram lost	70.112 16770 86882	Ni flake	100G
126	Equiv 14.22 lost	3537 752 42.89 8578	Ni flake	50G
127	Equiv 12.22	35.092 8885 43.977 87794	Ni flake	50 G
125	Eqv 11.76 lost,	36.45 7.67 44.12	Ni flake	50 G

Tried Key 2% HCl. 10% MthyCl
to clean flake — apparently
MthyCl cleans it best.

1st taken to Bacteriologist 2 liters

	1	2
	847	843
	873	867
	860	857
Hat, 1st	460	467
1st after hat	800	800
2nd "	693	697
3rd "	653	660
4	640	647
5	607	610
	610	613

2nd sample — 3 liters

	827	830	820
	853	853	847
	870	863	860
Hat	633	627	600
1st after hat	600	577	550
2nd "	550	537	517
3	537	460	
4	503	487	417
	507	490	413

Shared Tubes

129- Loaded Reg 4 flake 26 Ni
Reg chamber

May 2nd 1st Runs —
New flake improved old Ni old flake
160 Mah —
New Ni 383.

Big Cat — 2 Offs Knockers

#129 — 4 ft 24 Ni 233 7.125	Old Ni Old flake	1st	667	660	7125 — 7055
		2	897	850	
		3	873	830	
		4	830	790	
		5	797	727	
		7	797	747	
129 — 224 7054	New Ni Old flake	1st	1050	1050	7395 — 7325
		2nd	1203	1203	
		3rd	1200	1200	
		4	1223	1213	
			1207	1193	
			1223	1220	
129 252 7.395	Old Ni New flake	1st	[illegible]	[illegible]	7382 — 7340
			900	860	
			890	843	
			873	830	
			833	797	
			863	827	

	1st Run	2nd Run	
131	667	897	old Ni old flake
132	660	850	old Ni old flake
133	1050	1203	new Ni old flake
135	827	900	old Ni new flake

	1st Run	2nd Run	
13[illegible]	587	860	old Ni new flake
134	1050	1208	new Ni old flake

238 D	6864	130 old Ni old f	1st Run	643	648
242 D	6910	10% Glycerine	2	833	843
			3	813	823
			4	773	780
				787	793
245	7270	new Ni old f	1st	1007	990
240	7265		2	1183	1203
				1183	1200
				1170	1187
				1190	1207
262	7225	Old Ni new f	1st	643	627
254	7223		2nd	850	857
				840	850
				813	827
				833	850
232	6957	131 old Ni old flake	1st Run	623	657
225	6960	15% Glycerine	2nd "	805	833
				790	810
				757	770
				767	777
255	7328	new Ni old f	1st	967	983
248	7415		2	1187	1190
				1187	1190
				1177	1180
				1207	1210
254	7347	Old Ni new flake	1st	803	807
261	7310		2nd	817	823
				830	823
				807	807
				823	830

132 Old Ni old f 20% Glycerine	1st Run 2	483 673 677 673 677	477 673 690 657 700
New Ni old f	1st 2	1007 1197 1200 1203 1247	1003 1193 1200 1203 1247
Old Ni New f	1st 2	467 677 690 653 723	450 647 673 673 700
133 — Old Ni old flake K Hypophosphorous	1st Run		
New Ni old flake	1st Run		
Old Ni new flake	1st Run		

For Disintegrating Flake + Nu from old Lieber

174	Acetanilid	
175	Benzoate Soda	
176	1% HF in Lead	
177	10% Sol Para-Amidophenol	
142	Ammonium	Acetate
143	"	Benzoate
144	"	Oxalate
145	"	Sulphate
146	"	Tartrate
147	"	Citrate
148	20% Sol "	Formate 5 grams
149	"	Hyposulphite 6 grams
150	"	Nitrate
151	"	Phosphoric —
152	"	Sulphite
153	"	Hypophosphate
154	Ferrous	Ferrous Chloride
155	Ferric	Ferric "
156	Lead	Nitrate
157		

158	Calcium	Chloride
159	"	Nitrate
160	"	Acetate
161	"	Chlorate
162	"	Citrate
163	Chromium	Acetate
178	"	Nitrate
164	Copper	Sulphate
165	"	Acetate
179	"	Nitrate
166	Zinc	Sulphate
167	"	Hypophosphite
168	"	Acetate
180	"	Nitrate
169	Magnesia	Acetate
170	"	Chloride
171		Nitrate
181		Citrate
182		Fluoride
172		Hyposulphurous
183		Phosphate
173		Sulphate
184		Sulphite

Old Ni new f. 271 - 7605
" 256 7607
New Ni old f - 250. 7281
250 - 7282

Old Ni new f 257 7272
271 7350

New Ni old f - 264 7432
265 7458

134 Old Ni Old flake 1st Run 1193 1187
K Sulphide (Lirm S)
1st 193 187
2 200 220
3 186 168
643

New Ni old flake 1st Run 703 640

Old Ni new flake - 1st Run

135 Old Ni New flake 1st Run 533 523
Na Salicylate 2nd 703 708
707 707
700 697

New Ni Old flake 1st Run 963 977
1103 1117
1158 1173

Old Ni New flake 1st Run

Old Ni new ff	272 / 250	7360 / 7223	
New Ni old f –	263 / 264	7512 / 7522	

136 Old Ni New flake K formate.	1st Run / 2nd	727 / 750 / 723 / 73	707 / 720 / 690
New Ni Old flake	1st Run	1010 / 1110 / 1147	997 / 1128 / 1163
Old Ni new flake –	1st Run	720	697
137 Old Ni old flake Na ferrocy	1st		
New Ni Old flake	1st		
Old Ni New flake	1st		

138 Old Ni old flake 1st
Na Glycerophosphate

New Ni old flake 1st

Old Ni new flake 1st

139 Old Ni Old flake 1st
Na Bromiate

New Ni Old flake 1st

Old Ni new flake 1st

140 Old Ni Old Flake 1st Paraamido benzine sulphonate		1	2
New Ni Old flake	1st		
Old Ni new fl	1st		
141 - Old Ni Old flake 1st Glucose			
New Ni old flake	1st		
Old Ni new flake	1st		

244-7.097

260 7.443

230 7108

125	old M. old f	2nd Run	673	673
		3 "	783	
		4	757	
			747	
	new M old f	2nd	1197	1193
			1183	
			1147	
			1223	
	old M new f	2nd	677	647
			777	
			747	
			947	
126 –	old M old f	2nd	833	
			810	
			790	
			787	
	new M old f	2nd	1173	
			1167	
			1170	
			1217	
	Old M new f	2nd	820	
			800	
			770	
			767	

255-6938

268-7329

275-7329

249-7482

249-7482

127- Old Mr Old f- 2nd 757
757
717
707

new Mr Old f- 2nd 1117
1100
1190
1133

old Mr new f 2nd 760
740
717
710

128- old Mr New f 1st 777 797
2 1 800 810
773 790
770 770

new Mr old f 1060 1050
1213 1177
1277 1270

old Mr new f

Made 500 grms old-like mix in
15% glycerin 3% KOH or NaOH —
got very green — washed
flake away — washed
green wash — dried & put
about oz in different
acids 3% sol, only put
enough acid in to wet &
cover 1/8 to 1/4" deep —
left all night —
In morning only one
trial showed abnormal

Was acetic a
phenomenon
the acetic a phosphate
acid more large
white precip
Oxalate precipitate
from acetic &
Ammonia

Was acetic — like Tartaric acetic
Phosphoric are green Oxalate Boric [illegible]
~~green~~ + on blackening + all
~~green, but~~ acetic black
from black carbon ppt
precipitin — liquid followed
a green & black carbon
left on paper — followed
slowly —— all the
others followed fast +
normal —

I soak out acids from green

Test like sample from Phosphate
acetic also same —

~~[illegible]~~ Ni green from 5.46 lot in
glycerinated 30% acetate —

Then to the green —
Treated about 1/2 gr. one oz. or
so with
3% Phosphoric
" Acetic
" Boric
" Tartaric
" Citric
" Phenol
Oxalic

Put in the 3% sol on Ni just enough
to cover it for 1/8 more in 3" beaker
flask, left it all night & boiled
after phenol No pp with common
or KOH, none with Tartaric
Boric Oxalate — phosphoric
was green — Acetate left
Oxalate white — Acetate
phenol gave [illegible]
precip [illegible] also it
[illegible] acetic [illegible] the
See 2 pages ahead

Lowe off. use 100 grams
of Fe from old pockets,-
Break up to 1/4 inch to 1/8
& Soak in acid Hydrofluoric
you worked Ni in. Soak
48 hours wash free dry
in air & put in Corked Bottle

8 387 292
8 314 283 Dumps 29-av dumps

Run	40 Hot runs		Hot			
63	1173	867	708	171	1153	987
64	1153	1097	713			
65	1143	1000				
116	1153	883	727			
117	1200	977				
118	1210	1033	707			
169	1143	947				
170	1150	973				

100 Hot runs

8 129 276
8 007 269 29.4 av dumps

	40 Hot		Hot			
63	1200	1123	733	171	1150	1170
64	1117	1110	747			
65	1100	1107				
116	1127	1127	757			
118	1190	1170	783			
169	1143	1160				
170	1160	1163				

100 Hot

7 990 263
7 778 254 30.3 av dumps

Run	40 Hot					
63	1150	1100	783	171	1198	1173
64	1127	1140	823			
65	1130	1087				
116	1203	883	803			
117	1163	1117				
118	1160	1160				
169	1180	1090	790			
170	1177	1133				

100 Hot runs

E
142 - green header Carbolic 4 min

Old ni new f - 10 Hot runs

1253-1190 Hot 890.
1223 1117
1213 1080

1st	597	543	570	348	
2	943	893	918		
3	1087	1047	1067	149	
4	1147	1110	1128	61	
5	1143	1107			
6	1160	1140			
7	1150	1127			
8	1177	1157			
9	1157	1143			

E
143 " Boric 4 min

Old ni new f 10 Hot runs

1227-1233. Hot 757 757
1173 1183
1160 1163

1st	517	550	533	333	
2nd 747 746	843	890	866		
3	997	1017	1007	141	
4	1063	1070	1068	59	
5	1060	1057			
6	1090	1080			
7	1077	1060			
8	1113	1090			
9	1093	1077			

E
144 " Oxalic

Old ni new f - 10 Hot

1247-1200 - Hot 710-720
1157 1127
1130 1107

1st	450	413	446	382	
2	817	840	828		
3	993	983	988	160	
4	1040	1090	1065	73	
5	1033	1010			
6	1027	1017			
7	1030	997			
8	1065	1027			
9	1047	1010			

8545 302

8 605 297

25.6 per Temp

	40 Hot	Hot				
63	1117	1110	757	171	1190	1200
64	1117	1120	813			
65	1107	1103				
116	1093	1147	773			
117	1177	1210				
118	1067	1213	783			
169	1140	1153	260			
170	1170	1180				

100 Hot

29.8 per Temp

	40 Hot	Hot				
63	1133	1117	883	171	1267	1247
64	1130	1117	893			
65	1127	1097				
116	1200	1200	853			
117	1240	1240				
118	1217	1217	850			
169	1223	1130	271			
170	1247	1223				

100 Hot

29.[illegible] Temp

	40 Hot	Hot				
63	1190	1000	900	171	1310	1157
64	1187	1133	850			
65	1193	1147				
116	1000	1000	800			
117	1267	1143				
118	1310	1193				
169	1267	1140	750			
170	1283	1130				

100 Hot

E Gone on 10 Runs Hot –

145 – Green Breaded Tartaric –

Old Mi Newf – 10 Hot
1243–1267 – Hot 653–660
1160 1230
1157 1200

1st	453	507	480	327
2	787	827	807	
3	967	1007	987	180
4	1067	1090	1076	91
5	1097	1100		
6	1117	1127		
7	1097	1120		
8	1143	1150		
9	1117	1133		

E

146 " Citric

Old Mi Newf – 10 Hot runs
1210–1243. Hot 657–647
215 1123 1153
1093 1127

1st	493	[illegible]	488	377
2	873	857	865	
3	1013	1020	1016	151
4	1050	1030	1040	24
5	1033	1017		
6	1033	1023		
7	1033	[illegible]		
8	1060	1040		
9	1053	1033		

E

147 " Acetic

Old Mi Newf 10 Hot
1260–1200 Hot 600–607
1187 1133
1173 1127

1st	590	[illegible]	586	327
2	923	903	913	
3	1050	1020	1035	122
4	1093	1067	1080	45
5	1073	1050		
6	1097	1060		
7	1087	1057		
8	1110	1090		
9	1100	1070		

gone on Hot heat

7590	247	31.2 per dump
7624	240	

E

148 green treated Phosphoric

Old Mixed -

1st	10.	13.	S	S
2	7	10	0	0
3	7	7		
4	7	10		
5th	7	7		
6	7	10		
7	7	7		

Co -

all Reps

120 Mesh 5 grms - 72

	14549	14550	1E	2E	3E	4E
8	1200 1800	955 1290	1180 1890	1160 1810	935 1360	1160 1795
16	1225 1845	960 1315	1220 1940	1195 1840	950 1420	1175 1795
24	1180 1805	900 1255	1200 1910	1180 1855	960 1350	1135 1785
32	1150 1775	900 1280	1215 1910	1145 2370	920 1365	1080 1615
40	1135 1740	835 1185	1170 1835	1080 1650	840 1215	965 1460
48	1200 1840	875 1230	1155 1805	1070 1630	840 1260	945 1465
56	1050 1650	825 1190	1185 1875	1055 1715	900 1310	980 1500
64	1160 1750	835 1130	1190 1800	1010 1540	875 1240	885 1355
72	1180 1755	775 1165	1135 1755	1000 1495	825 1180	825 1250

Iron packets from 4 yr old Cells washed & ground through 120 mesh & sent to Silver Lake to put in 5 gram packets.

Thank you should mixed 20% of very fine 180 mesh new Fe with old to prevent old from coming out of packets.

Old 72 Coulanni S Lake 1825

Sh 1824	7 gram Pkts		10 gram pockets	
	5E	6E	7E	8E
8	645 690	1510 2410	2007 3313	1953 3206
16	1555 2485	1685 2830	2013 3186	1960 3066
24	1570 2495	1690 2830	2067 3347	1973 3173
32	1600 2500	1725 2860	2000 3200	1940 3093
40	1585 2475	1750 2850	1933 3160	1913 3047
48	1590 2475	1785 2880	1947 3267	1907 3093
56	1640 2570	1830 2940	1680 2720	1513 2400
64	1660 2525	1850 3005	1600 2595	1393 2267
72	1455 2230	1745 2750		

Evidently the iron comes out of pockets — see 8E 48 56 & 64 Run

Partially washed by following ACIDS on old green-[illegible]

Amidobenzoic Mela-Ortho Para
Amidosulphonic
Phenolsulphonic ONA — X
Anisic
Anisosulphonic
Bromic X
Chloric X
Butyric X
Caproic
Monochloroacetic X
Chrysanimic
Cinnamic
Cresolic Para Ortho Meta
Cyanacetic
Cyanuric
Dethionic
Phthalic X
Maleic
Malic
Malonic
Naphtylaminesulphonic

Acids Continued

Perchloric	X
Phenylacetic	X
Phosphotungstic	X
Sulphosalicylic	X
Sulphurous	
Diazobenzenesulphonic	
Diazosalicylic	
Dithiosalicylic	
Ethylsulphonic	
Ethylsulphuric	
Fumaric	
Gallic	
Gentisic	
Glyceric	
Glycolic	
Heptoic	
Hydrobromic	X
Hydrofluoric	X
Hydrosilicofluoric	X
KCy	X

from Expts 142 to 148 – 148
shows that old mi loss especially
is due either to phosphate
aluminate, oxalate formed
or ferrates,

There is very little Iron in
mix so ferrate is improbable
Aluminate + phosphate
is probably the trouble,
with possible oxalate
or a silicate,

The thing next in view
of 148 is to investigate what
phosphoric acid elimination
has taken place

I notice lot of Irons from old packets put in various cards. Some are fragile, others just as strong as 1941 –

The – Most White irons from Old 4yr Weekes is taken out by Phosphoric Acid in Na formula –

But the test in battery shows 925 MAH for weekes & 110 MAH for phosphoric formula – Why is better than weekes formula, I cannot –

Phosphoric is a big phenomenon – phenomenon

Makes Ni/Cd/2 most

Why ? ?

All Irons —

All on 230 Run Orlando
Monday washed, washed 4
times, total time 98 hours
before put out to dry —

All the old Irons
Couldnt load 5 grams
used 7 grams in
pocket —

10% Iron for mixed
used with all
149 to 172
Many of the old, discharge
boy tech uncertain

Old Fe 4 yrs

149-E 4 yr old Iron 5 gram pocket, iron
3% Tartaric — No 149 E ground thru 60 mesh
Miller adds 10% new iron thru 80 mesh

Run							
1	1570	1700		11	1575	1600	
2	1640	1775		12	1515	1600	
3	1600	1880		13	1540	1625	
4	1412	1437	750	14	[illegible]	1525	
5	1337	1375		15	1410	1480	
6	1187	1150		16	1400	1500	
7	1688	1735		17	1585	1670	
8	1645	1810		18	1500	1545	
9	1850	1890		20	1600	1670	
10	1575	1610		21	1600	1690	Co

150, E 3% Boric Acid —

	No 1	No 2					
1	1570	1500		11	1520	1525	
2	1600	1540		12	1490	1490	
3	1600	1497		13	1515	1515	
4	1187	1125	750	14	1450	1410	
5	1212	1144		15	1410	1390	
6	1112	1100		16	1420	1400	
7	1600	1600		17	1610	1620	
8	1685	1700		18	1500	1500	Co
9	1710	1750		20	1600	1600	Sunday
10	1575	1610		21	1635	1645	

Old Fe 4 yrs

151 E 3% Oxalic Acid

1	1640	1700		11	1435	1475	
2	1640	1700		12	1425	1470	
3	1588	1665		13	1440	1520	
4	1100	1400		14	1350	1445	
5	1394	1400	750	15	1310	1315	
6	1100	1200		16	1300	1400	
7	1575	1680		17	1460	1580	Co
8	1640	1750		18	1330	[illegible]	
9	1710	1770	Not weak	20	1470	1565	
10	1475	1545	cracks	21	1475	1560	

152 E 3% Phosphoric Acid

1	1880	200		11	1590	1530	
2	1860	1670		12	1575	1470	
3	1900	1730		13	1600	1500	
4	1412	1250		14	1495	1435	
5	1400	1450	750	15	1440	1395	
6	1225	1175		16	1460	1400	Co
7	1775	1685		17	1630	1555	
8	1800	1700		18	1500	1470	
9	1895	1825	Not weak	20	1630	1560	
10	1635	1545	cracks	21	1650	1565	

Evidently phosphorus acid dont limit Zinc like it limits Nickel

Old 7½ 4yrs

153E 3% Acetic

1	1570	1765	
2	2000	1755	
3	2000	1735	
4	1437	1375	450
5	1225	1425	
6	1275	1187	
7	2050	1710	
8	1970	1750	
9	1945	1850	
10	1680	1575	

11	1670	1580
12	1685	1520
13	1615	1550
14	1590	1490
15	1535	1450
16	1580	1475
17	1765	1645
18	1650	1525
20	1780	1665
21	1770	1650
22	1680	1585
24	1640	1550
25	1610	1510
26	1700	1585
27	1640	1525
28	1575	1485

154E 3% Hydrofluoric Acid

1	1450	1250	
2	1850	1700	
3	1860	1700	
4	1437	1287	
5	1450	1212	450
6	1200	1050	
7	1770	1635	
8	1810	1690	
9	1895	1715	
10	1630	1535	

11	1000	1325
12	1575	1490
13	1625	1520
14	1500	1445
15	1470	1425
16	1480	1430
17	1645	1580
18	1540	1475
20	1630	1600
21	1650	1590
		19

G

156

49	1700	1660

156 F A = 2nd Run —

1		
2	1790	1680
3	1780	1665
4	1700	1645
5	1650	1690
6	1660	1625

This is 156, run 7 grams but no Extra 10% reqd added in d

7	1745	1675
11th	1760	1750
12	1710	1700
15	1635	1645
16	1720	1700
17	1665	1650

Old Fe 4 yrs

155 B Hydrofluorosilicic Acid

1	1385	1690	
2	1700	1650	
3	525	1600	
4	437	1287	
5	475	1225	950
6	612	1025	
7	1710	1635	
8	1760	1650	
9	1850	1825	Heat commencing
10	1600	1575	Cooler
11	1580	1515	
12	1560	1435	
13	1590	1420	
14	1460	1350	
15	1425	1305	
16	1400	1280	
17	1560	1400	
18	1425	1300	
20	1570	1400	
21	1565	1400	

Co

156 E Sulphurous Acid

1	1865	1860	
2	1950	1860	
3	1900	1800	
4	1425	Stick	
5	5 1	1500	950
6	1425	1500	
7	1965	1970	
8	1980	1980	
9	2125	2100	Heat commencing
10	1890	1890	Cooler
11	1900	1900	
12	1835	1860	
13	1850	1855	
14	1815	1835	
15	1785	1820	
16	1790	1825	
17	1860	1910	
18	1845	1900	
20	1900	1930	Saturday
21	1900	1930	
22	1865	1873	
24	1800	1860	
25	1790	1835	
26	1850	1895	
27	1835	1855	
28	1790	1835	

Old F2 4 yrs

157 E Arsenic Acid 3%

1	1900	1925	
2	1870	1870	
3	1800	1855	
4	1450	1437	750
5	1475	1462	
6	1237	1237	
7	1800	1800	
8	1810	1810	
9	1955	1960	Not corrected
10	1635	1640	Corrected
11	1625	1630	
12	1575	1570	
13	1600	1600	
14	1490	1500	
15	1440	1480	
16	1450	1480	
17	1590	1585	
18	1500	1500	
20	1625	1600	
21	1595	1595	
22	1570	1530	
24	1510	1505	
25	1500	1500	

158 E Phosphotungstic Acid 3%

1	1865	1875	
2	1785	1885	
3	1700	1955	
4	1450	1437	
5	1462	1212	750
6	1187	1250	
7	1765	2045	
8	1900	1930	
9	1850	1895	Not corrected
10	1615	1640	Corrected
11	1590	[illegible]	
12	1580	1580	
13	1625	1625	
14	1500	1490	
15	1450	1440	
16	1490	1460	
17	1670	1635	
18	[illegible]	[illegible]	
20	1665	1690	
21	1690	1654	
22	1555	1535	
24	1515	1500	
25	1510	1460	

Old Fe 4 yrs

159 E Phosphomolybdic Acid 3%

1	1965	1775	
2	1885	1685	
3	1900	300	
4	1425	187	
5	1425	625	450
6	1275	750	
7	1865	1565	
8	1940	1670	
9	1970	1650	[illegible]
10	1700	1470	[illegible]
11	1700	1470	
12	1685	1435	
13	1700	1460	
14	1615	1400	
15	1575	1345	
16	1575	1325	
17	1740	1520	
18	1690	1390	
20	1770	1575	
21	1775	1560	
22	1685	1425	
24	1610	1355	
25	1585	1335	
26	1655	1440	
27	1600	1375	
28	1525	1300	

160 E Trichloroacetic Acid 3%

1	1870	1875	
2	1770	1900	
3	1700	1970	
4	1425	1362	
5	1312	1237	450
6	1212	1312	
7	1720	2045	
8	1800	1970	
9	1895	1890	[illegible]
10	1600	1640	[illegible]
11	1580	1590	
12	1540	1575	
13	1550	1600	
14	1400	1470	
15	1395	1425	
16	1400	1400	
17	1600	1595	
18	1500	1485	
20	1630	1575	
21	1600	1595	
22			

Co

Old fe 4 yrs

161 E Formic Acid 3%

1	1790	1575	
2	1700	1565	
3	80	1500	
4	1225	1437	
5	1225	587	750
6	1250	917	
7	2000	1460	
8	1910	1580	
9	1815	1575	Had cooled Cooler
10	1615	1430	
11	1595	1420	
12	1580	1400	
13	1615	1415	
14	1490	1350	
15	1445	1310	
16	1460	1300	Co
17	1630	1465	
18	1500	1325	
20	1670	1470	
21	1565	1480	

162 E Salicylic Acid 1/4 %

1	1985	1995	
2	1900	1950	
3	1895	1900	
4	1500	1450	
5	1462	1450	750
6	1250	1175	
7	1875	1800	
8	1900	1810	
9	1995	1955	Had cooled Cooler
10	1700	1710	
11	1700	1710	
12	1685	1700	
13	1700	1740	
14	1585	1620	
15	1550	1590	
16	1575	1620	
17	1735	1700	
18	1700	1700	
20	1750	1800	
21	1760	1780	
22	1675	1710	
24	1615	1660	
25	1600	1645	
26	1700	1735	
27	1630	1670	
28	1575	1600	

Old Fe 4 yrs

163 E Benzoic Acid 1/4%

1	1675	1800		11	1450	1500	
2	1650	1750		12	1440	1550	
3	1600	1700		13	1460	1525	
4	1250	1375		14	1440	1465	
5	1212	1412	450	15	1385	1425	
6	1137	1187		16	1370	1435	Co
7.	1640	1685		17	1540	1585	
8	1675	1730		18	1420	1540	
9	1715	1820	Heat coagulation	20	1555	1600	
10	1485	1590	Cooler	21	1555	1600	
				~~22~~			

164 E Para Cresylic 2%

1	1800	250	SCKF	11	1550	1600	
2	1700	250		12	1550	1580	
3	1630	1800		13	1620	1620	
4	1425	1225		14	1490	1525	
5	1425	862	752	15	1460	1460	
6	1225	1262		16	1470	1460	Co
7	1725	1900		17	1635	1625	
8	1770	1920		18	1540	1500	
9	1860	1860	Heat coagulation	20	1675	1655	
10	1580	1640	Cooler	21	1645	1650	

Old 72. 4 4-5

165 E Meta Cresylic Acid 2%

1	1970	1900	
2	1900	1800	
3	1900	1795	
4	1400	1487	
5	1450	1462	750
6	1225	1250	
7	1875	1875	
8	1920	1870	
9.	1990	1975	Hal coccus Cerolens
10	1710	1675	
11	1700	1675	
12	1655	1645	
13	1700	1700	
14	1595	1595	
15	1565	1565	
16	1590	1585	
17	1765	1750	
18	1690	1800	
20	1780	1875	
21	1785	1845	
22	1695	1710	
24	1625	1625	
25	1610	1610	
26	1705	1705	
27	1635	1635	

166 E Ortho Cresylic Acid 2%

1	1900	1590	
2	1870	1600	
3	1860	1600	
4	1500	1312	
5	1475	1250	750
6	1250	1212	
7	1850	1600	
8	1860	1675	
9	1960	1760	Hal coccus Cerolens
10	1670	1500	
11	1675	1770	
12	1620	1475	
13	1660	1465	
14	1555	1419	
15	1530	1400	
16	1520	1415	
17	1700	1560	
18	1560	1490	
20	1740	1600	
21	1700	1600	
22	1635	1525	
24	1595	1500	
25	1555	1500	
26	1645	1585	
27	1590	1490	

Chy Rec Mat
Dischy 300 ma
ACC Trans
Home

Oldfe 4 yrs

167 E Picric Acid 3%

1	1800	1890		11	1600	1700
2	1760	1880		12	1550	1650
3	1700	1880		13	1530	1700
4	1362	1425		14	1470	1600
5	1250	1437	750	15	1400	1550
6	1225	1275		16	1400	1590
7	1725	1865		17	1565	1750
8	1760	1900		18	1495	1650
9	1865	1975	Hot ice-cl	20	1635	1755
10	1580	1705	Cooler	21	1655	1755
						Co

168E Hydrochloric Acid - 2%

1	1725	1800		11	1685	1630
2	1795	1750		12	1625	1585
3	1875	1765		13	1570	1550
4	1425	1375		14	1585	1590
5	1150	1487	750	15	1535	1515
6	1200	1250		16	1540	1535
7	1980	1730		17	1760	1740
8	1960	1815		18	1695	1650
9	1860	1900	Hot ice-cl	20	1755	1745
10	1635	1615	Cooler	21	1800	1765
				22	1685	1675
				24	1600	1620
				25	1550	1585
				26	1650	1680
				27	1530	1600

Old 72 4 yrs

169 E Chromic Acid 3%

1	910	900	
2	935	1025	
3	650	970	
4	225	525	
5	550	575	950
6	562	662	
7	950	1125	
8	880	940	
9	910	1020	
10	885	995	
11	870	930	
12	875	920	
13	860	890	
14	850	840	
15	810	830	Co
16	850	900	
17	940	875	
19	850	900	
20	835	895	

170 E Carbolic Acid 3%

1	1730	1690	
2	1800	1765	
3	1690	1690	
4	1150	1087	
5	1212	1150	750
6	1212	1225	
7	1890	1890	
8	1635	1650	
9	1675	1700	Co Co
10	1590	1600	
11	1495	1575	
12	1550	1600	
13	1480	1480	
14	1455	1465	
15	1440	1500	Co
16	1570	1600	
17	1490	1540	
19	1600	1640	
20	1600	1655	

Old Fe 44

171 Citric Acid 3%

1	1700	1700	
2	1830	1820	
3	1700	1700	
4	1125	1175	
5	1212	1275	750
6	1262	1312	
7	1965	1945	
8	1725	1760	
9	1670	1720	
10	1600	1650	
11	1585	1625	
12	1610	1630	
13	1475	1525	
14	1435	1535	
15	1425	1500	
16	1640	1700	
17	1520	1580	Co
19	1645	1700	
20	1660	1745	

172 Nitric Acid 2%

1	1700	1635	
2	1725	1600	
3	1590	1500	
4	1087	1062	
5	1075	1050	750
6	1125	1100	
7	1850	1735	
8	1585	1460	
9	1630	1570	
10	1495	1430	
11	1480	1400	
12	1465	1400	
13	1360	1355	
14	1325	1335	
15	1300	1315	
16	1420	1430	
17	1325	[illegible]	Co
19	1400	1470	
20	1450	1475	

Dried 173 to 177 all night and temp + 5 min on hot plate in Hoover.

Acetic was only one that gave off odor — seemed to hold water + dry slow —

Old Ni 4 yrs

173 E Saturated Phenol in Water

1st	617	633	4 in 24		7547	258
2	987	1000			7510	249
3	1047	1047				
4	1043	1047	19	963	937	
5	1020	1017	20	940	890	Co
6	1027	1037	21	900	820	
7	1033	1047	23	877	833	
8	1037	1043				

10 Hot

230 - 231

I now soak them in Conc CoCl after returning from Dwatt. See book 2

174 E Formic Acid 0/p

1	1100	1107				
2	1153	1157			7547	280
3	1113	1117			7547	279
4	1100	1100				
5	1070	1073	19	997	1003	
6	1090	1090	20	967	983	
7	1100	1100	21	930	940	
8	1103	1103	23	900	917	

10 Hot

232 - 233

I now soak in Conc CoCl after returning from Dwatt See book 2

Much colloid, filtering very slow on account of colloid running thru filter — Acetic alone has this feature, phenol a little. Phenol in alcohol more than phenol in water — Cellulose acetate must be some significance in it, =

Washed with Dilute Alcohol all comes thru no color —

Old Ni 4 yr cell

175 Acetic Acid 6%

1	1123	1117
2	1170	1150
3	1130	1097
4	1127	1090
5	1083	1050
6	1107	1063
7	1117	1067
8	1117	1067

Hot 10

7 777 266
7 854 259

19	940	977
20	950	957
21	913	917
23	883	887

6

176 Phenol in Alcohol 12%

1	847	860
2	1033	1047
3	1070	1010
4	1067	1000
5	1040	973
6	1050	993
7	1060	1000
8	1053	1000

10 Hot

7 277 259
7 297 259

19	890	913
20	883	893
21	860	857
23	830	833

6

236-237

Now soak in Conc Collodion
Cotton from Smith. see book 2

This is even more colloid than Acetic or glycerine —
If Colloids coming from the Li and running thru filter when work cooler is funny filtered then pyrophosphate of Soda will be good.

Potassium Citrate —
washwater quite Colloid —

177. Saturated Soda Pyrophosphate.

1	1097	1077		7 530	262	
2	1130	1110		7 528	256	
3	1090	1067				
4	1080	1067	19	950	943	
5	1047	1013	20	930	910	
6	1067	1043	21	893	877	
7	1077	1057	23	877	853	
8	1083	1057				

18 Oct

G

Iron –

178 – Miller Mixer with Reg
Iron Mix 10% of seed mix
time 150 @ 180 mesh to keep
iron from coalescing to almost
a solid by action of the Hg.

Filtrate, Light green.

Ni

179E Tartaric Acid 3%

1st	0	0			7 170	251	
2	1020	1030			7 170	242	
3	1033	1043					
4	950	983		19	893	910	
5	1110	1113		20	857	893	
6	1117	1017		21	[illegible]	[illegible]	Co
7	1013	1013		22	800	837	

10 Hot

filtrate not green
(second wash water a little cloudy)

180E Phosphoric Acid 3%

1	227	627			6,985	238	
2	150	100			7009	232	
3	53	10					
4	23	7		18	200	78	
5	13	7		19	390	3	
6	10	-3		20	303	0	Co
7	10	3		22	190	0	

10 Hot

after soaking last Sunday — [illegible] water formed VERY colloid — This acid seems to require time to give colloidal [illegible] water — most colloidal yet, if this turns out good it would need more time, 2 or 3 days in acid or 4 or 5 days soak —

faint colloid in formed [illegible] water —

181 E Hydrofluoric Acid 3%

1st	260	567		7549	270	
2	939	1117		7510	262	
3	1120	1117				
4	1097	1067	18	970	960	
5	1117	1087	19	967	957	
6	1127	1087	20	937	917	Co
7	1113	1067	22	927	897	

10 Hot -

182 E Hydrofluorosilicic Acid -

1st	977	850		7250	253	
2	967	1190		7283	248	
3	960	953				
4	917	927	18	923	600	
5	957	968	19	910	957	
6	977	967	20	870	[illegible]	
7	980	977	22	847	853	

10 Hot

Very light green

Not green. – after warm bath all night. Coffee colour lyce final yellowing – even stronger than phosphothangatic a –

1

183 E Sulphurous Acid 3%

1st	1173	1133			7 618	273
2	1183	1000			7 574	264
3	1167	1120				
4	1100	1057	18	973	997	
5	1147	1103	19	1010	977	
6	1143	1107	20	[illegible]	[illegible]	
7	1130	1090	22	893	903	

10 Hot

Ca

Hot day

184 E Arsenic Acid 3%

1st	967	950			7 262	255
2	977	997			7 175	244 -
3	1000	980				
4	950	917	18	947	883	
5	1010	997	19	917	873	
6	1020	987	20	[illegible]	870	
7	1023	983	22	893	820	

10 Hot

Collard Comes Thru —
Hard to Lighter — after reach stee
Little Collard

Very faint trace green

185E Phosphotungstic Acid 3%

1st	1033	997			7319	258
2	1083	1000			7240	249
3	1047	980				
4	990	920				
5	1033	993	18	920	867	
6	1053	987	19	910	897	
7	1060	983	20	887	853	
			22	873	830	

10 Hot

G

186E Phosphomolybdic acid 3%

1st	1057	1023			7222	264
2	1027	620			7236	253
3	1033	1037	18	877	897	
4	953	947	19	860	883	
5	1017	950	20	823	873	
6	1023	990	22	800	817	
7	1020	987				

10 Hot

G

White filtrate

187 E Trichloroacetic acid 3%

1st	1147	1157		7 273		257
2	1177	1150		7 251		252
3	1133	1097				
4	1067	1050	18	963	973	
5	1123	1077	19	927	940	
6	1117	1083	20	873	910	
7	1093	1077	22	877	983	
10 Hot						

C p

White filtrate —

188 E Salicylic acid 1/4%

1st	1107	1150		7.208		261
2	1147	1150		7 300		252
3	1110	1117	18	970	1040	
4	1043	1060	19	940	1017	
5	1080	1083	20	[illegible]	[illegible]	
6	1083	1090				
7	1077	1080	22	873	950	
10 Hot						

C o

Colitis -

189 E Benzoic acid 1/4%

1st	1160	1143		7410	259	
2	1100	1110		7390	259	
3	1123	1113				
4	1063	1053	18	1030	973	Co
5	1100	1087	19	1000	960	
6	1107	1087	20	950	917	
7	1077	1080	22	937	893	

10 total

Whole

190 E Pavia Chaoytic acid 2%

1st	183	700		7262	254	
2	177	1050		7253	242	
3	1047	1017				
4	990	950	18	970	960	Co
5	1027	977	19	907	910	
6	1027	983	20	827	880	
7	1040	1067	22	853	857	

10 total

No green.

190 + all before sent to SB & Co May 18 1914.

1915 Picric Acid ~~2%~~ 1%

1st	727	1123			7.230	263
2	1083	1150			7.235	259
3	1157	1057				
4	1067	1033	18	1020	1003	
5	1107	1067	19	960	967	
6	1110	1067	20	901	917	
7	1087	1067	22	913	933	

10 Hot

1922 Reg new green in 3% Phosphomolybdic Acid

1st	950	967			7276	242
2	1143	1123			7290	254
3	1173	1143	After Hot			
4	1223	1190	24	1247	1240	
5	1223	1247	25	1167	1200	
6	1227	1263	26	800	1173	
7	1277	1317		40 Hot.		
8	1277	1273				
9	1293	1280	67 Ru	1220	1233	
10	1327	1283	68	—	1133	
11	1330	1190	69	1357	1163	
12	1333	1267	120	1197	1050	
13	1313	1240	121	1307	1060	
			122	1307	1103	

Schedule run on
Reg Varnish plates to
get rid of bubbles & Heat up to
Condense hard enough to
Stop Birds —

Started 120 — 1 hour to reach 130 ?
One hour more to reach 140
Held at 140 for 3 hours —
Took one hour to reach 225
Held one hours at 225 —
Took them out at 225 right — the
air — I Rech no plates only

Plates placed carefully and
buffed —

Transfer

OK 11/11 —

This schedule seems OK no
blisters or any defects —

Took some mix from 4 yr cells
reduced by Na Hyposulphite
& analysed it —

Silica —	0·065 %
Iron oxide	0·29
Alumina	0·11
Lime	0·022
Sulphate as SO_3	0·077
Phosphate	Very small trace
Insoluable in acids	0·017.

There is 6 mlg Al_2O_3 per Long Cubic
in A4 —

193

121	1177	1150
122	1167	1140

194

121	1160	1153
122	1217	1147

New green

193E

Formic Acid 6%

1st	1027	1037		7366	274
2	1160	1167	after Hat	7331	265 D
3	1123	1123	24	1283	1277
4	1150	1157	25	1183	1220
5	1183	1157	26	1177	1177
6	1157	1150	–	40 Hat	
7	1187	1173	67	1280	1187
8	1177	1167	68	1163	1127
9	1190	1180	69	1117	1140
10	1200	1190	120	1243	1200
11	1200	1900	New green		
12	1190	1193			
13	1170	1163			

194E

				7400	260
1st	1150	1100	After Hat	7380	245 D
2	1223	1210	24	1327	1333
3	1177	1160	25	1247	1263
4	1217	1187	26	1203	1246
5	1227	1210	After 40 Hat		
6	1207	1193			
7	1227	1210	67	1327	1290
8	1223	1210	68	1210	1190
9	1280	1267	69	1220	1200
10	1297	1263	120	1290	1197
11	1323	1290	121		
12	1320	1297			
13	1317	1277			

NOTE

As the acid combined with the M(OH) — & water didn't wash it out its probable when put in acid, it, reacted or changed so it couldn't run —

Should use MOH of Ca, the treatment or cerium free & dry

New green

195 E Phosphoric Acid 3%

1st	83	33		7082	254
2	18	17		7087	240
3	0	0			
4	0	0			
5	0	0			
6	0	0			
7	3	3			
8	3	3	CO		
9	0	0	CO		

Old M

196 E Potassium Lactophosphate

1	3	3		7066	233
2	3	3		61942	200
3	3	3			
4	3	10			
5	0	10			
6	0	10	CO		
7	0	0	CO		

197 E Potassium Nitrite

1	1113	1118		7292		241
2	1107	1100	After Hot	7262		240
3	1087	1067	22	983	980	
			23	900	893	
4	1057	1053	24	823	833	
5	1047	1030				
6	1017	1000				
7	1033	1013				
8	1038	1003				
9	1037	1020				
10	1020	1000				
11	997	977				

198 E Potassium Sulphocyanate

1	1077	1117		7248		252
2	1066	1100	After Hot	7238		250
3	1047	1087	22	933	967	
4	1027	1063	23	853	873	
5	1010	1047	24	800	797	
6	993	1020				
7	997	1033				
8	993	1033				
9	993	1037				
10	990	1027				
11	957	997				

199 E Potassium Sulphate

1	1117	887		7245		256
2	1110	1073	after bled at	7228		251
3	1090	1047	22	957	990	
4	1067	1000	23	867	907	
5	1053	1010	24	797	797	
6	1033	907				
7	1043	997				
8	1043	993				
9	1050	993				
10	1043	990				
11	1013	953				

200 E Potassium Chloride -

1	917	1087		7215		249
2	1107	1067	after bled	7189		250
3	1083	1063	22	977	933	
4	1060	1057	23	890	880	
5	1047	1037	24	807	817	
6	1017	1000				
7	1033	1013				
8	1023	1000				
9	1033	1010				
10	1027	997				
11	993	957				

202 follows very slowly—

201 E Potassium Bromide

1	1103	1123			7.298	263
2	1110	1110	after heat		7.311	256
3	1080	1083	22	933	933	
			23	860	860	
4	1053	1057	24	810	813	
5	1043	1040				
6	1020	1017				
7	1037	1038				
8	1030	1020				
9	1040	1030				
10	1027	1023				
11	993	997				

202 E Potassium Ferrocyanide

1	1083	1053			7.275	200
2	1073	1050	after heat		7.160	252
3	1060	1027	22	973	977	
4	1027	1000	23	917	893	
			24	867	833	
5	1030	980				
6	1000	957				
7	1020	947				
8	1013	967				
9	1017	990				
10	1010	933				
11	943	913				

Rapid action - much gas, had to pour off Excess -

203

120	643	687
121	627	673

204

120	720	713
121	700	733

203 E Potassium Bisulphate

1	1100	1127		7305		268
2	1093	1120	after Hot	7282		263
3	1070	1087	22	917	933	Hots
4	1043	1073	24	827	870	
5	1000	1037	25	850	880	
6	1020	1050	after	40 Hot	—	
7	1013	1047	66	823	873	
8	1023	1050	67	717	777	
9	1000	1040	68	733	790	
10	987	1000	119	700	773	
11	1050	1073				
12	1050	1077				

204 E Potassium Carbolate

				7293		261
1	1130	1133	after 18 H	7312		256
2	1113	1117	23	927	963	
3	1080	1087	24	887	930	
4	1067	1067	25	880	930	
5	1040	1040		40 Hot		
6	1050	1050	66	877	550	
7	1047	1047	67	800	673	
8	1043	1040	68	800	810	
9	1033	1040	120	753	680	
10	1017	1000				
11	1103	1077				
12	1093	1073				

205 E Potassium Ferricyanide

1	1067	1067		7190		252
2	1050	1053	10 Hot	7110		243
3	1000	1020				
4	1000	1000	23	850	893	
5	987	990	24	833	897	
6	993	987	25	833	897	
7	973	967		40 Hot		
8	977	977	66	840	840	
9	930	933	67	780	773	
10	900	917	68	800	810	
11	943	990	120	760	757	
12	933	983	121	627	673	

206 E Potassium Formate

1	1110	1133		7183		251
2	1103	1117		7243		252
3	1063	1083	10 Hot			
4	1050	1060	23	937	943	
5	1023	1033	24	887	893	
6	1040	1040	25	873	877	
7	1033	1033		40 Hot		
8	1043	1040	66	860	880	
9			67	757	800	
9	1033	1030	68	750	807	
10	1000	997	120	774	767	
11	1080	1063	121	710	720	
12	1090	1067				

Curious

203 to 208 —

Hot Capacity is only

100 less Than Cold

Capacity —

Strange —

all about same

207 E Potassium Citrate

				7198	261	
1	1113	1123	10 Hot	7220	253	
2	1113	1093				
3	1080	1057	23	960	947	
4	1073	1047	24	900	903	
5	1043	1013	25	890	950	
6	1053	1017		40 total		
7	1053	1003	66	913	933	
8	1067	993	67	820	833	
9	1057	990	68	810	843	
10	1023	967	120	787	800	
11	1107	1027	121	717	733	
12	1100	1047				

208 E Potassium Benzene Sulphonate 466 off

				7223	260	
1	1157	1150	10 Hot	7315	249	
2	1140	1133				
3	1133	1103	23	967	977	
4	1090	1077	24	917	923	
5	1063	1047	25	900	913	
6	1077	1070		40 total		
7	1080	1043	66	917	950	
8	1087	1047	67	813	857	
9	1067	1030	68	810	867	
10	1047	1000	120	787	840	
11	1127	1000	121	707	777	
12	1127	1067				

209E

210E

211 E.

Dup of 1902

1st	680	695	reduced
2	650	670	
3	675	700	
4	675	705	
5	650	690	
6	650	685	
7	740	775	
10	825	850	
11	845	870	
12	830	870	
13	780	805	
14	770	800	
16	555	570	
17	815	825	
18	810	825	

1902A

						Not reduced
1	1490	1425	14	1600	1550	
2	1575	1490	16	1625	1625	
3	1550	1485	17	1600	1565	
4	1450	1430	18	1585	1535	
5	1435	1400				
6	1500	1425				
7	1635	1580				
10	1700	1645				
11	1745	1660				
12	1675	1625				
13	1585	1550				

Silver Lake –

		Old	7½ reduced on H scale
1			
2	795	805	#1902
3	780	790	
4	795	785	
5	780	825	
6	785	810	
7	755	770	
8	775	780	
9	850	855	
12	890	900	
13	900	910	
14	875	890	
15	840	850	
16	830	845	
18	900	910	
19	855	865	
20	850	840	

#1902A

1					
2	1720	1700	14	1625	1650
3	1700	1650	15	1525	1575
4	1670	1625	16	1520	1600
5	1675	1635	18	1590	1620
6	1600	1600	19	1540	1565
7	1575	1575	20	1500	1535
8	1590	1590			
9	1665	1680			
12	1675	1680			
13	1690	1690			

Much Fe_2O_3 hydrox

Started to run with 1% NaH but stopped —
n

all concentrated Sols Regenerated Old Fe

212 E Potassium Chloride - Saturated

1	1180	1400
3	1300	1485
4	1330	1475
5	1270	1400
7	1155	1345
8	1125	1325
9	1230	1400
10	1140	1375

213 E Old Fe K Al Sulphate K

1	1365	1600
3	1400	1520
4	1420	1075
5	1300	1625
7	1235	1380
8	1235	1345
9	1315	1460
10	1290	1400

214 E old Fe K Chromate.

1	1365	1420
3	1275	1285
4	1335	1355
5	1280	1300
7	1160	1175
8	1125	1135
9	1225	1235
10	1145	1150

washed 1% KOH.

1% KOH, 10 washes
has ferric OH,

1% wash KOH

215 E old 7½ K' Sulphide (Evans)

1	1190	1385
3	1400	1535
4	1440	1550
5	1425	1500
7	1400	1435
8	1375	1410
9	1460	1500

216 E old 7½ - K Manganate,

1	1025	990
3	855	810
4	835	780
5	785	725
7	680	665
8	625	620

217 E old 7½ K Hypersulphide

1	1480	1525
3	1490	1545
4	1445	1645
5	1400	1525
7	1300	1400
8	1275	1375
9	1375	1455
10	1355	1415

Has Tannic (6)

Little Tannic (4) - Brown

1% KOH coarse -

218E add to K Permanganate,

1	815	825
3	690	660
4	560	600
5	540	550
7	570	555
8	530	545

219E add to K Bisulphate,

1	1620	1535
3	1750	1675
4	1755	1690
5	1600	1560
7	1585	1525
8	1545	1550
9	1605	1555
10	1575	1550

220E add to K Ferrocyanide

1	1370	1335
3	630	630
4	750	795
5	740	750
7	1055	1080
8	1135	1150
9	1300	1345
10	1240	1290

Had some Ferric (4)

221 E old F. K Phosphate.

1	1495	1500
3	1600	1600
4	1600	1600
5	1500	1500
7	1465	1425
8	1435	1400
9	1495	1475
10	1460	1440

222 E old F. – K Iodide.

1	1610	1590
3	1680	1635
4	1660	1600
5	1530	1500
7	1500	1435
8	1500	1430
9	1575	1515
10	1535	1475

223 E old F. K Oxalate.

1	1415	1460
3	1545	1560
4	1545	1600
5	1415	1415
7	1375	1350
8	1375	1420
9	1455	1410

224 E old F. – K Ferrocyanide

1	1660	1600
3	1640	1600
4	1600	1545
5	1460	1445
7	1580	1415
8	1520	1420
9	1590	1465
10	1535	1470

Some Fabric O&H

225 E and Fe – K Bichromate

1	1200	1255
3	680	685
4	680	684
5	600	610
7	625	625
8	600	600

Co

226 E and Fe K Nitrite

1	1440	1465
3	1475	1500
4	1455	1500
5	1310	1355
7	1240	1340
8	1200	1330
9	1260	1380
10	1245	1345

227 E and Fe – K Arsenite

1	1470	1525
3	1560	1600
4	1600	1650
5	1500	1525
7	1525	1515
8	1500	1500
9	1592	1595
10	1550	1560

228 E and Fe K Carbonate

1	1575	1555
3	1730	1680
4	1735	1660
5	1600	1520
7	1525	1475
8	1520	1445
9	1595	1525
10	1550	1477

229 E the old Iron without any Treatment just as sent [illegible]
Rot nearly out

1	1595	1675
3	1685	1740
4	1685	1740
5	1580	1645
7	1560	1575
8	1555	1575
9	1600	1630
10	1585	1645

230 E Old iron without any Treatment
Rot nearly out

1	1595	1550
3	1690	1700
4	1725	1740
5	1600	1650
7	1500	1590
8	1500	1565
9	1535	1645

From 212 to 230 sent to Lake to be grown
Have 40 @ 60 mesh 10%
need 7# mix added
Mixed into 7 grain pounded
no Mg added except what is in the 10% mix

10	1500	1585

Ur Chl in at 11 am Tuesday just wet
only little excess of liquid
Out drying Friday 9 am —
put on hot plate 1½" block.
off Hot plate 1130 pm —
Drying Monday after Chloride all out,
24.2 green 4 fl — wt 7744 — 236 Dump
7734 230 "

56 grms Uranium Chl to
A4 Cell

8 A4 to 1 lb Ur C 5.16 Dettum —

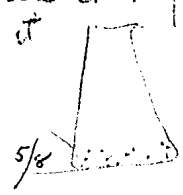
63 Cents per A4 —

Chemist says green crystals
4.48% Uranium figured as
Uranium Chloride —
2.81% Metallic Uranium

See next page

231 E Uranous Chloride —
10% reacts a little acid
from hydrolysis —

Just put enough solution on
green to saturate it 1 qrs. 1/32
of solution above it



Put soak 11 am Tuesday

Took out Friday 9 am for drying
at 3 pm in cobalt pie plate put on
hot plate, 1½" high block —
Took off 1130 pm — Saturday
at 10 20 am put in 10% NaOH.
started washing out NaOH. 1 30 pm
Saturday
Tuesday was dried entirely &
put in bottle.
Chemist testing percent Uranium
in —
Sent to Smith to put up 2 short
tubes —

Uranium etc Short tubes

Run			
1	903	927	
2	1043	1050	
4	1173	1160	
5	1193	1183	
6	1190	1167	
7	1217	1197	
8	1243	1233	
9	1247	1230	
10	1257	1243	
22	1322	1257	
23	1317	1270	To 9

1333-1287 To 1/2 V -

· heading of back page after 50 that

64	1377	1340	
65	1327	1267	
66	1293	1233	Hot.
119	1310	1260	Hot top 577-
120	1273	1200	
121	1300	1257	

This would require about 100 grm Black Oxide Cobalt per A4 cell at 1.00 lb 23 Cents for Cobalt,

240 E

40% Concentrated Cobalt Chloride put on $Ni(OH)_2$ 1220 Vacuum dry in 6 gallon jar - no Excess 817 cc of solution

Run see NO 2 book

The $Ni(OH)_2$ for the 2 A4 Cells - contain 5.82% Metallic Cobalt or 9.17% of Cobalt Hydrate dry

Each A4 cell is dry 8 tubes there was not enough hydroxide

Weigh all when dry

No Excess liquid -

200 grms old Fz in 3% Sulphurous acid, twice bulk of liquid to bulk of Fz

200 grms 175cc Sulphurous acid

Soaked 52 hours = washed 3 or 4 times 24 hours dried — very black when started to dry — when dry quite red

Should have been dried in vacuum or H_2O washed out with alcohol —

232 E

1/4 lb Duplicate of 156 E

Old Fz 3% Sulphurous acid

Will number it

232 = 3% Sulphurous acid 2 days, washed & dried with ferric on surface should have been washed in alcohol to stop ox — ground thru 60 mesh 10% new Fe mix added a 7 gram pucks mix

1	1650	1640
2	1685	1745
3	1650	1670
5	1635	1630
6	1610	1590
7	1645	1600
8	1580	1585
9	1580	1580
30	1615	1660

233 E Old Fe. soaked K Benzoate
at 219 – Hard to crush

1	1800	1745
2	1800	1735
3	1750	1615
5	1600	1525
6	1525	1500
7	1600	1535
8	1500	1465
9	1465	1450
30	1425	1430

234 Old Fe K Chlorate
at 220 – Hard to crush

1	1845	1785
2	1850	1800
3	1700	1675
5	1550	1525
6	1675	1550
7	1735	1545
8	1640	1500
9	1540	1465
30	1700	1585

235 E Old Fe K Sulphite

Off 221 – Hard to coach

1	1870	1950
2	1870	1945
3	1750	1790
5	1640	1650
6	1610	1610
7	1650	1670
8	1590	1635
9	1575	1595
30	1615	1590

236 E. Old Fe – K Cyanide

222 Off, Hard to coach.

1	1845	1745
2	1750	1665
3	1735	1650
5	1720	1625
6	1690	1590
7	1740	1630
8	1640	1525
9	1585	1525
30	1615	1555

237. E cold Fe (Hydrosulphite)

224 ott, hard to crack

Dried very slowly

1	1180	1200
2	1660	1600
3	1635	1600
5	1650	1600
6	1650	1565
7	1650	1625
8	1595	1535
9	1595	1540
30	1810	1775

238 E cold Fe K Bitartrate

ott 225, no crack (red)

1	1900	1900
2	1955	1950
3	1815	1815
5	1715	1720
6	1690	1680
7	1735	1700
8	1655	1675
9	1650	1660
30	1700	1705

239 E Old Fe Soaked 2 or 3 days
twice Cold Sulphurous Acid 6%
(Think 6%) — Soaked 2 days cold
H_2O changed — then H_2O drained off
soaked Denatured Alcohol
2 days — dried — at exhaust
all through — red — Alcohol sent
percent) sent to Walter —
all now are ground then
60 mesh 10% fresh Fe mix
added & make up into
7 gram packets for Smelter
Tests

1st	1030	990
2	1335	2075
3	1315	2140
4 *	1475	2245
5	1460	2140
6	1480	2070
7	1530	2085
8	1470	2090
10	1475	2110
12	1480	2225
14	1450	2225
35	1095	1770

* Changed Nickels — in low cell —

240 To the Big Lot of
Colonel Che for Wreck-

100 Records — 10 Good

Cost Calcul -

of 1000 for the

10 —

100) 1000 (10

[ITEM(S) FOUND IN BOOK]

EDISON CHEMICAL WORKS

THOMAS A. EDISON, President
R. A. BACHMAN, Vice-President & Genl Mgr
H. F. MILLER, Treasurer
W. H. MEADOWCROFT, Secretary

J. V. MILLER, Manager

Telephone {4136 / 4137} Branch Brook
Telegraph Address, Via Newark, N. J.
Express Address, Wells Fargo, Bloomfield, N. J.

SILVER LAKE, N. J. July 9th/14.

Mr. T. A. Edison,
Edison Laboratory,
Orange, N. J.

Dear Mr. Edison;-

Report on Loading Tests of Iron Mixes
Made from Ferrous Ammonium Sulphate.

Your experiment numbers- 249 E
250 E
251 E
252 E

Tests made with Machine #704 - Factory Loading Dept.
" " by W. Archer, Storms, & writer, July 8, 1914.

Alterations to machine - Hopper supplied with two partitions to make small hopper, so that the small samples could be loaded into two pockets at a time. Arranged in middle of machine.

Samples considerably too small to allow full number of pockets to be loaded at once, and also too small to make much adjustment to reduce loading weight.

In each case, two or four pockets were loaded before the test pockets were loaded.

Following are the results;-

(Cont.)

[ITEM(S) FOUND IN BOOK]

GENERAL SUMMARY

Experiment	Dumps	Loading Weight.
249 E	14	8.66 gms.
"	14	8.67 "
"	16	8.86 "
"	16	8.93 "
Feeding O.K.		
250 E	13	8.69 "
"	13	8.35 "
Feeding O.K.		
251 E	15	8.37 "
"	15	8.42 "
"	15	8.56 "
"	15	8.46 "
Feeding O.K.		
252 E	19	8.93 "
"	20	8.79 "
"	20	8.98 "
"	20	8.995 "
Feeding O.K.		
Reg.Batch #1945	12	8.250 "
"	13	8.150
Feeding O.K.		

This is the same iron as the others but not pressed.

Details of these experiments are as follows;-

(Cont.)

[ITEM(S) FOUND IN BOOK]

(Page 2)

Iron was pressed in 10" Die molds

Experiment 252 E- Moisture 5% 21 KOH

Pressed 2000 lbs.

Special iron #1945.

Thru 10 mesh; fines in.

Setting of cams, etc., same as for regular iron mix.

Loaded two pockets as preliminary;-

" four test pockets;-

#1 -	19 dumps,	Ld.Wt.	8.93 grams
#2 -	20 " ,		8.79
#3 -	20 " ,		8.98
#4 -	20 " ,		8.995

Feeding O.K.

Experiment 249 E- Moisture 2% of 5% KOH

Pressed 2000 lbs.

Special iron #1945.

Thru 10 mesh, fines in.

2 pockets	-	General test	-	Dumps	15-16		
2 "	-	" "	-	"	15-15		
#5 "		For Special "	-	"	14	Ld.Wt.	8.66 gms.
#6 "		" " "	-	"	14		8.87 " .
2 "	-	General test	-	"	15-15		
2 "	-	" "	-	"	16-16		
#7 "		For Special "	-	"	16-		8.86 " .
#8 "		" " "	-	"	16		8.93 " .
2 "	-	General "	-	"	16-17		
2 "	-	" "	-	"	18-19		

Last four pockets high in dumps as small amount of iron was in hopper. Feeding O=K.

[ITEM(S) FOUND IN BOOK]

Experiment 250 E- Moisture 2% H_2O.

Pressed 2000 lbs.

Special iron #1945.

Thru 10 mesh; fines in.

2 pockets - General Test - Dumps 13-14 Ld.Wt. 8.98 gms.

Increased stroke of cam to lessen Loading Weight.

2 pockets - General Test - Dumps 13-15 Ld.Wt. 8.97 gms.

Increased stroke of cam to the limit.

2 pockets - General Test - Dumps 13-13 Ld.Wt. 8.80 gms.

#11 " For Special " - " 13 8.69 "

#12 " " " " - " 13 8.85 "

Feeding O.K.

Experiment 251 E- Moisture 5% saturated LiOH

Pressed 2000 lbs.

Special iron #1945.

Thru 10 mesh; fines in.

Same setting of machine as last test in Exper. #250-E.

2 pockets - General Test - Dumps 14-15 Ld.Wt. 8.575 gms.

2 " - " " - " 13-13 8.495 "

#13 " For Special " - " 15 8.670 "

#14 " " " " - " 15 8.420 "

#15 " " " " - " 15 8.560 "

#16 " " " " - " 15 8.460 "

Feeding O.K.

In all cases the feeding seemed to be O.K. as far as could be judged with the small samples. No clogging whatever.

After completing the above tests, made a test with a small sample of Iron Mix #1945. Same iron as in above tests, but

[ITEM(S) FOUND IN BOOK]

not pressed, and just as sent from Silver Lake.

Setting of machine same as last previous test given above.

2 pockets	-	General	Test	-	Dumps	15-16	Ld.Wt.	8.135	gms.
2 "	-	"	"	-	"	15-15		8.285	"
2 "	-	"	"	-	"	16-17		8.055	"

Added more iron to hopper.

2 pockets	-	General	Test	-	"	13-14		8.245	"
#17 "		For Special	"	-	"	13		8.250	"
#13 "		"	"	-	"	13		8.150	"

Feeding O.K.

Possibly this packs in hopper slightly more than the iron which was pressed, but the general feeding was satisfactory to Archer, and Storms, the foreman.

Yours very truly,

J. Miller

[ITEMS(S) FOUND IN BOOK]

MEMORANDUM

EDISON STORAGE BATTERY CO.

July 9, 1914.

Mr. Bachman:-

Following report is of 3 bottles of Iron Mix which Mr. Edison sent over July 8,1914, for loading weights and remarks.

Mach.#704 Center of hopper was divided so as to load only two pockets. Machine feed fingers open full.

#1- Sample- A	pocket	dumps =	10	Weight	- 8.910
	"	"	10	"	- 8.790
Feeding O.K.	"	"	10	"	- 8.830
	"	"	10	"	- 8.770
#2- Sample- A	"	"	10	"	- 9.090
	"	"	11	"	- 9.140
Feeding O.K.	"	"	10	"	- 9.100
		"	11	"	- 9.230
#3- Sample- A	"	"	9	"	- 9.110
This sample did	"	"	10	"	- 8.730
not feed as good	"	"	9	"	- 8.310
as the other two	"	"	10	"	- 8.570
samples.					